ECA/POP/TP/87/3[1.3(i)]

July 1987

ECONOMIC COMMISSION FOR AFRICA

METHODOLOGICAL PROBLEMS IN EVALUATION OF FAMILY PLANNING, MATERNAL AND CHILD HEALTH PROGRAMMES IN AFRICA

Prepared by the
Population Division

I. INTRODUCTION

1. 1984 was a landmark in the history of family planning programmes in Africa. In that year at the 2nd African Population Conference convened in Arusha, Tanzania, African Governments adopted the Kilimanjaro Programme of Action on Population (KPA), which called on African Governments to recognize the usefulness of family planning and child spacing on the stability and well being of the family. The KPA then urged countries to incorporate family planning services into the maternal and child health services. Furthermore, it called on the Governments to make necessary efforts to improve the planning, funding and management for more effective implementation of mother and child health and family planning (MCH/FP) programmes.

2. Since 1980, many African countries have shown interest to integrate family planning programmes with those of MCH services[1/] and have initiated programmes which are at different stages of integration. Among the specific objectives of these integrated MCH/FP programmes include reducing fertility rates, infant and childhood mortality rates, maternal mortality, mortality and morbidity in general and to space births adequately as part of efforts to improve the well being of the people. In order to ensure that the integrated MCH/FP programmes are achieving their desired objectives and goals, it is essential to evaluate these programmes. For a decade up to 1986 the United Nations Population Division in collaboration with the International Union for the Scientific Study of Population (IUSSP) carried out studies and research on evaluating the effects of family planning programmes on fertility. The results of these have been documented in various UN publications. Reference will be made to these later as they are the main source of information for preparation of this paper.

3. The objective of the present study is to review methodological problems in evaluating the impact of family planning programmes and whether these methodologies can be applied to evaluate the impact of integrated MCH/FP programmes. The review is intended to provide information that may be useful to those concerned with the evaluation of MCH/FP programmes. It is being undertaken as one of the approved ECA work programme for the biennium 1986/87 under programme element 1.3 output (i) "Methodological Problems in evaluating integrated maternal and child health/family planning programmes in Africa". The next sections of this study will deal with the following aspects respectively: the concept of evaluation in MCH/FP programmes and statistical data needs for evaluation; review of available methodologies for evaluating the impact of family planning programmes on fertility; evaluation of the impact of integrated MCH/FP programmes on the health of the child and mother; evaluation problems unresolved; conclusion and recommendations.

1/ ECA Report on Integrated Maternal and Child Health/Family Planning in Africa, ECA/POP/WP/87/3[1.3(ii)]

II. THE CONCEPT OF EVALUATION IN MCH/FP PROGRAMMES AND STATISTICAL DATA NEEDS FOR EVALUATION

(a) The Concept of Evaluation

4. Evaluation is a process which attempts to determine as systematically and objectively as possible the relevance, effectiveness and impact of activities in the light of their objectives; it is a learning and action-oriented management tool and organizational process for improving activities still in progress and future planning, programming and decision-making.[1/] In order to facilitate the evaluation of MCH/FP programmes, both immediate and long term or developmental objectives need to be specific and clear. They should be quantified and have time reference as to when they are expected to be achieved.

5. Evaluation should be conceived as part of the MCH/FP at the initial planning stages. Specific arrangements have to be included within the programme regarding research studies to be undertaken as part of the evaluation, who has to do the evaluation, when to do the evaluation, and provision of resources for the evaluation. The evaluation as a process should also evaluate the inputs into the programmes being evaluated e.g. (a) organization structures - whether these are adequate and their weaknesses, (b) material supplies for delivery of the services, (c) management problems, etc. The results of evaluation should be made available to policy-makers, planners and all concerned with the implementation of MCH/FP programmes to guide them in improving the planning and execution of these programmes. A diagram on the timing of evaluation in relation to project activities is shown in Figure I.

(b) Statistical Data Needs for Evaluation

6. No evaluation of MCH/FP programmes can be effectively undertaken without statistics on such programmes. From the objectives and targets of the MCH/FP programme, one would need to devise indicators to be used in evaluation. An indicator, according to WHO, is a statistic used to measure change in what ever is being evaluated at any two or more points in time. These indicators should be valid - that is they should actually measure what they are supposed to measure; they should be objective - the answer should be the same if measured by different persons in similar circumstances[2/]. With regard to MCH/FP programmes,

---

1/ UNESCO, Sven Grabe, Evaluation Manual Socio-economic Studies 6, 1983 (See introduction section of the publication).

2/ WHO, Development of Indicators for Monitoring Progress Towards Health for all by the Year 2000 Geneva, 1981, p. 12.

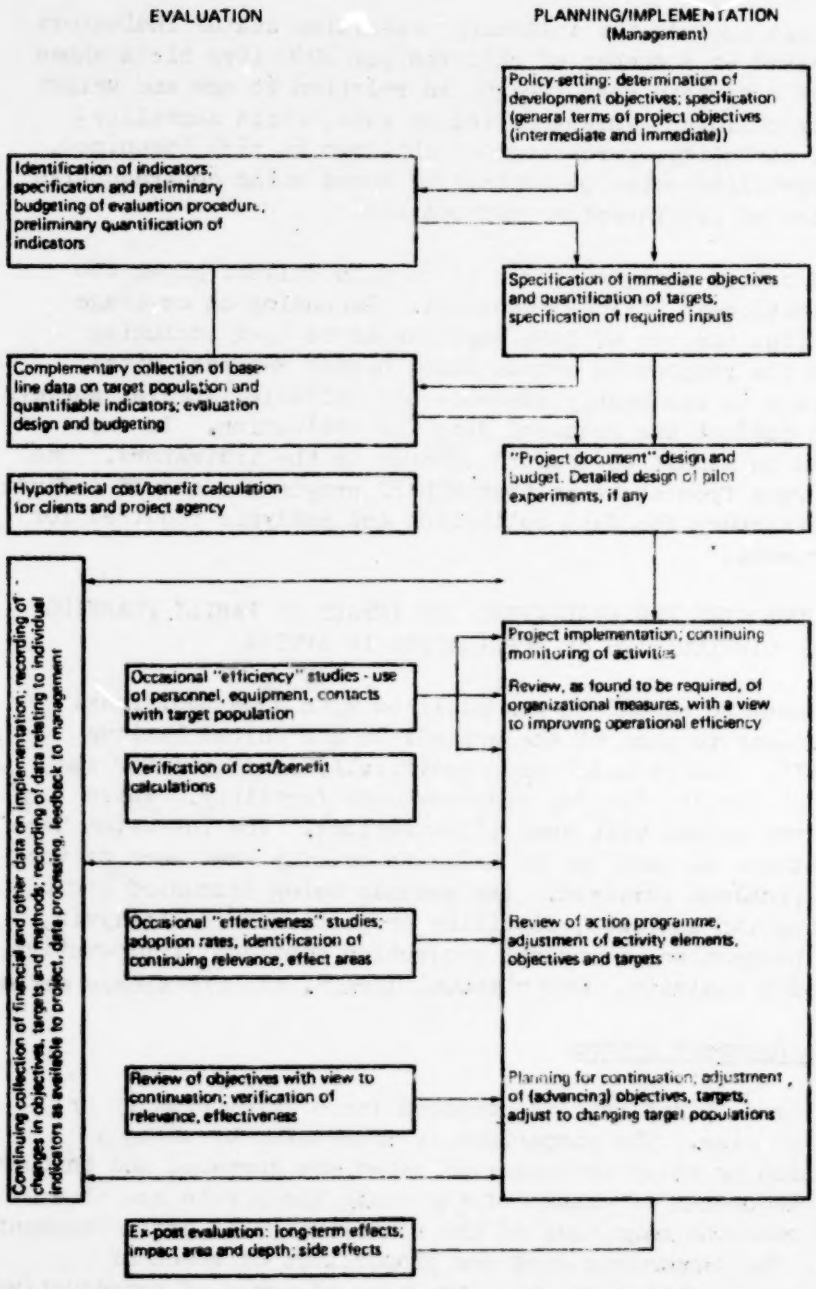
EVALUATION
PLANNING/IMPLEMENTATION
(Management)
Policy-setting: determination of development objectives; specification (general terms of project objectives (intermediate and immediate))
Identification of indicators, specification and preliminary budgeting of evaluation procedure, preliminary quantification of indicators
Specification of immediate objectives and quantification of targets, specification of required inputs
Complementary collection of base-line data on target population and quantifiable indicators; evaluation design and budgeting
"Project document" design and budget. Detailed design of pilot experiments, if any
Hypothetical cost/benefit calculation for clients and project agency
Continuing collection of financial and other data on implementation; recording of changes in objectives, targets and methods; recording of data relating to individual indicators as available to project; data processing, feedback to management
Project implementation; continuing monitoring of activities
Occasional "efficiency" studies - use of personnel, equipment, contacts with target population
Review, as found to be required, of organizational measures, with a view to improving operational efficiency
Verification of cost/benefit calculations
Occasional "effectiveness" studies; adoption rates, identification of continuing relevance, effect areas
Review of action programme, adjustment of activity elements, objectives and targets
Review of objectives with view to continuation; verification of relevance, effectiveness
Planning for continuation, adjustment of (advancing) objectives, targets, adjust to changing target populations
Ex-post evaluation: long-term effects; impact area and depth; side effects

Fig. 1. Timing of evaluation in relation to project activities.

Source: Reproduced from Evaluation Manual, Socio-Economic Stu
6 by Sven Grabe, UNESCO, 1983

indicators to be used should include the following: nutrition status indicators e.g. birth weight - expressed as a number of children per 1000 live birth whose birth weight is lower than a certain norm, weight in relation to age and weight in relation to height, for children; infant mortality rate, child mortality; life expectancy, maternal mortality, percentage of children at risk immunized, crude birth rate, total fertility rate, percentage of women using contraceptive methods, continuation rates of contraceptive methods etc.

7. Not all the indicators designed would be easy to collect given the difficulties of data collection in African countries. Depending on coverage of MCH/FP programmes, various sources of data may have to be used including statistics generated from the programme, census data, health records, vital registration if the coverage is reasonably adequate and reliable, special surveys conducted periodically to collect the required data for evaluation. In fact the time series data would be a must to measure changes in the indicators. One clear conclusion that emerges from above is that MCH/FP programmes should include within them strong infrastructure for data collection and analysis required for evaluation of these programmes.

III. AVAILABLE METHODOLOGIES FOR EVALUATING THE IMPACT OF FAMILY PLANNING ON FERTILITY AND DIFFICULTIES OF APPLICATION IN AFRICA

8. In 1986 an addendum to Manual IX was publised with some additional information and clarifications to some of the methods in the United Nations Manual IX published in 1979. The methods were specifically developed for the evaluation of the impact of family planning programmes on fertility. These methods are explained in the manual with some illustrations. The intention here is not to reproduce these methods as such but to indicate briefly what each of the methods is about and the problems involved. The methods being discussed include the following: Standardization approach, fertility projection/trend analysis, standard couple-years of protection, component projection approach, reproductive process analysis, regression analysis, experimental design, and prevalence method.

(a) Standardization Approach Method

9. In this method crude birth rate is compared for a given country or area at 2 or more points in time. The comparison is undertaken by using a selected standard population to which the observed rates are compared and through controlling the various components of change of the crude birth rate one at a time. This helps to indicate the magnitude of the contribution of each component to the crude birth rate. The components used are proportions of women of reproductive ages in the total population, age structure of women of reproductive ages, proportion of married women of reproductive ages, and marital age-specific fertility rates. The standardization determines the contribution of these four demographic components to changes in magnitude of the observed crude birth rate. In evaluation, the method can be made to yield an estimate of the change in the crude birth rate that is attributable to changes in marital fertility. The role of marital fertility and the changes brought about by this variable may then be

attributed to the family planning programme, if evidence is sufficient to warrant such a conclusion[1]. The method is explained in detail with illustrations in Chapter I of Manual IX.

10. Among the advantages of this method are: simplicity in use of the method, data on crude birth rate or general fertility rate are not as difficult to obtain. The problems of the method include[2]: (a) the impact of the family planning programme on fertility cannot be directly assessed as the standardization does not go beyond to specifically indicate what change is due to effect of marital fertility; hence it cannot determine what part of the decline, if any, in marital fertility is due to socio-economic factors and what part to the programme activities. More analysis would be needed to ascertain what link may exit between programme acceptors and fertility reduction;(b) the method is limited also by the fact that it assumes that the components for which standardization is performed are independent of one another; (c) the estimates of change determined from standardization are primarily hypothetical information, based on specific assumptions regarding the components chosen and the population selected at a point of reference.

11. The countries for which the standardization method has been used in Africa are Mauritius and Tunisia. The findings in the case of Mauritius were that the number of births attributable to the decline in marital fertility between 1962 and 1972 was slightly greater than that attributable to other factors. It was assumed that the family planning programme was the main cause for the decline in marital fertility[3]. The standardization method used in Tunisia for the period 1966 to 1975 yielded results which the authors indicated were different and sometimes paradoxical, as for that case, because the method was used over a longer period so that most of the hypothesis became riskier[4]. Although it had seemed certain in 1971 that the decline in fertility should be attributed very largely to the family planning programme, in 1975, on the contrary, the decisive factors in the decline in fertility appeared to have been the change in the model of marriage and the marked increase in the age of marriage[5].

1/ United Nations, The Methodology of Measuring the Impact of Family Planning Programme on Fertility Manual IX, Population Studies, No. 66, New York, 1979, p. 7.

2/ Ibid p. 8, and United Nations, Studies to Enhance the Evaluation of Family Planning Programmes Population Studies No. 87, New York, 1985, pp. 33-34.

3/ Hanoomajee, Esther "Application of Methods of Measuring the Impact of Family Planning programmes on Fertility: The case of Mauritius" in United Nations, Evaluation of the Impact of Family Planning Programmes on Fertility: Source of Variance Population Studies No. 76, New York, 1982, p. 95.

4/ Jamai, Yolande and Jemai, Hedi, "An improved Application of Methods of Measuring the Impact of Family Planning on Fertility: The case of Tunisia, 1956-1979 in United Nations, Population Studies No. 76, 1982 p. 223.

5/ Ibid p. 223.

12. Outside Africa, case studies on application of the standardization method have been attempted to data for the following countries for the periods indicated (a) Hong Kong 1964-1976, Malaysia 1967-1976, Mexico 1974-1978, Republic of Korea 1966-1975, and Thailand 1970-1975[1]; (b) Columbia 1974-1979, Costa Rica 1973 to 1981, Pakistan 1963/65 - 1975, and Srilanka 1971-1981[2]. Appraisal of the method in various countries cited above confirm the same problems mentioned earlier.

13. Although the standardization method was designed to attempt to measure the impact of family planning programmes on fertility, it can also be extended for same application in integrated MCH/FP programmes. The problems of attributing change in fertility due to the MCH/FP programmes with any certainity will still remain unresolved.

(b) Fertility Projection/Trend Analysis Method

14. This method extrapolates the fertility trend prior to the date of the beginning of the family planning programme and compares that trend with the fertility trend after the beginning of the programme. This method requires a series of annual crude birth rates for the period before the programme as well as a series after the programme has started. The linear trends are established by making use of the least squares techniques. This method is illustrated in the UN Manual IX in Annexes I and II and more examples for Mauritius and Tunisia are presented in Population Studies No. 76[3]. The programme impact of family planning is the difference between the observed trend in fertility and the one that has been extrapolated.

15. Data constraints may render it difficult to use this method in many African countries. One of the main difficulties of this method is the choice to be regarded as the effective date of beginning of the family planning programme as pointed out by Chan [4] and Nortman[5]. Another problem is that the extrapolated linear trend obtained using the least square method fails to recognize the post

---

1/ UN Population Studies, No. 76 op.cit (See Part two)

2/ UN Population Studies, No. 87, op.cit (See Part Four)

3/ United Nations Population Studies No. 76, op.cit, pp. 95-96 and 223-226.

4/ Chan, K.C. "Application of Methods of Measuring the Impact of Family Planning Programmes: The Case of Hong Kong" in Population Studies No. 76, op.cit p. 48.

5/ Nortman, Dorothy L. "A Critique of the Methodologies to measure the Demographic Impat of Family Planning Programmes" in Population Studies 87 op.cit p. 34.

programme accelerating decline in fertility deriving from social and economic developments other than the programme[1].

16. Appraisal of the method applied to the data of Tunisia revealed the following deffects in the method[2].

(a) First, the method of estimating the trend is very approximate, based as it is on a mathematical technique that is often challenged in its application to economic and social phenomena. For example, it is unduly simplicitic to assume that the decline was linear before the introduction of the programme and then to estimate, by subtraction, the relative impact of family planning;

(b) Apart from the fact that it is approximative, the projection method is faulty because it is tendentious. In practice, any change in the base year, the elimination of any single year or the division of the time period into sub periods will yield different results, which are sometimes strikingly incompatible with the trend of the curve for the entire period;

(c) There is a third defect in this method, which derives from the other two and deprives it of credibility as a means of making future projections of the trend. For example, the trend that emerged by applying the linear projection to the subperiod 1965-1971 is definitely much sharper than that obtained either for the entire period 1965-1978 or for the second period 1972-1978. Consequently, no future family planning activities can be correctly planned or estimated without great surprises;

(d) To make the estimate, the method uses the crude birth rates, which are influenced by the change in the structure of the population by age and sex;

(e) Lastly, this method does not allow for estimating the relative impact of the various factors contributing to the decline in fertility.

17. Application of the trend analysis to the data for Hong Kong, Malaysia, Mauritius, Mexico and Thailand as presented in United Nations Population Studies No. 76 also point out similar weakness as presented above for Tunisia and some caution is called for in accepting the quantitative results derived from this method The fertility projection/trend analysis method, with its limitation, can also be used in evaluating the impact of integrated MCH/FP programmes on fertility.

1/ Nortman, Dorothy L. "A Critique of the Methodologies to measure the Demographic Impact of Family Planning Programmes" in Population Studies 87 op.cit p. 34.

2/ United Nations Population Studies, No. 76 op.cit pp. 225-226.

(c) Standard Couple-years of protection method

18. This method attempts to estimate the number of births that will be averted in a given year and subsequent years by the programme supplies and services provided in a given year. This is converted into a single figure expressed as the number of couple years of protection offered by the programme.

19. The data required to use this method to calculate programme achievement are as follows[1].

- Distribution of acceptors by method and age of wife at acceptance
- Acceptors by open interval at acceptance
- One-month and 12-month (or similar pair of observations) continuation rates for semi-permanent methods of contraception
- "Wastage" proportions of recurrent methods of contraception together with an estimate of continuation rate at least at one point in time
- Quantities of recurrent contraceptives provided to intending users
- Age-specific marital fertility rates
- Proportions of births that are first births by age of mother
- Age-specific mortality rates or, prefarably, recent mortality life table
- Mean duration of post-partum amenorrhea
- Age-specific mean duration of post-partum amenorrhea
- Pregnancy rates by method and age
- Ages of husbands of sterilization acceptors at acceptance
- Age-specific prevalence of female sterility
- Contributions of foetal loss to duration per birth by age of woman
- Proportion of (diagnosable) pregnancies preceeding to live-births by age of mother

20. Details on the application of the method are presented in UN Manual IX. In most African countries this method would not be used due to difficulties to obtain the required data. It has been attempted, however, in Mauritius and the data problem mentioned was experienced; consequently some data had to be borrowed from some standard tables developed for this[2]. The method has also been applied to the data of Tunisia where the defects in the basic assumptions on effectiveness of contraception and difficulties of obtaining the required data in developing countries were stressed as weakness in the application of the method[3]. The method is also somehow difficult to apply. Similar problems have been noted in application of the method in Malaysia, Mexico and Thailand as indicated in UN Population Studies No. 76.

1/ UN, Manual IX op.cit p. 42

2/ UN Population Studies No. 76, op.cit p. 97

(d) Component Projection Approach Methods

21. These methods are treated in Chapters III and IV of UN Manual IX as component projection approach 1 (also known as converse) and component projection approach II respectively. These methods also attempt to estimate the number of births that will be averted in a given year through the use of programme supplies and services.

22. Approach I has been computerized as a one-sex, age-component population projection model that survives an initial population every year over an interval of 5 or 10 years based on assumed mortality schedule. Births are projected annually under a natural fertility schedule which is modified by contraceptive practice. Subtracted from the annual births expected under the natural fertility schedule are births averted by programme acceptors, calculated as a product of the annual couple-years of protection experienced by acceptor cohorts and natural fecund fertility.1/

23. Problems that have been cited against component projection approach I include2/: (a) the method deals too crudely with contraceptive prevalence at the beginning of the projection period; (b) the weakness in the assumption that at all contraceptive prevalence levels, programme acceptors and users are fecund, thereby averting births in accordance with natural fecund fertility, which is greater than natural fertility. At high prevalence levels this assumption may not be warranted, in which case birth averted are overestimated; (c) the method does not allow for the ineffectiveness of contraceptive method. In the context of African situation the data requirements make this method rather unsuitable for application in many countries. However, it has been used in Tunisia where most of the relevant data were available for the period 1966 to 19763/. The model was found to be useful. Elsewhere the method has been applied to the data of Costa Rica, Mexico, the Republic of Korea, Thailand and Sri Lanka. In the case of Mexico it was indicated that the method could be considered a very complete and efficient for estimating programme impact. It permits one to obtain significant results in a straight forward way, perhaps limited by the availability of data4/. In the Republic of Korea the method was found to be useful because it provides programme administrators with the information needed to explain the effects of activities. Not all the parameters required for the model were available, as a result estimates and assumptions had to be made. The results obtained were found to be inconsistent with observed data in cases where a comparison could be made. Hence it was difficult to accept the outcome uncritically as being valid in the case of the Republic of Korea5/.

1/ UN Population Studies No. 87 op.cit p. 34.

2/ Ibid pp. 34-35

3/ UN Population Studies No. 76, op.cit pp. 234-240

4/ Ibid p. 136

5/ Ibid p. 169

24. The component projection approach II estimates the births averted in a given calendar year through the use of birth regulation methods provided by a family planning programme. This method was designed for use of desk calculators. In applying the method estimates have to be made of (a) users of a given family planning method; (b) potential fertility which is computed as an average of the acceptors' own fertility prior to acceptance. The number of births averted is the product of number of users of a specified family planning method and the corresponding potential fertility rate for each group. The data demands for application of the method are quite heavy i.e. programme statistics must be available. The calculations involved are laborious. Most African countries would not have the data needed for application of this method.

(e) Reproductive Process Analysis

25. This method is described and illustrated in Chapter V of UN Manual IX. It attempts to estimate the number of births that will be averted in one year or more by specific contraceptive methods provided by the programme. The method requires programme statistics data on method-specific acceptance rates usually IUDS, demographic data on age specific marital fertility rates, number of births to married women. Life table techniques are applied to calculate continuation rates for programme specific methods. Estimates are made on increase in birth interval due to contraception. Finally calculations of births averted per year per acceptor for each method are estimated.

26. This method was applied to data for Tunisia. The results indicated that the method is not easy to apply and calculations are lengthy[1/]. Lack of reliable programme statistics especially continuation rates by age groups makes this method rather unsuitable for use in most African countries. Furthermore the method does not account for other influences on birth intervals, such as sterility and postpartum amenorhea.

27. In Malaysia the method was found to be conceptually powerful in assessing objectively the gross births averted, particularly when used concurrently to several subsamples[2/]. It was also observed in application of the method to the data of Mexico that the method can be considered the clearest conceptualization to analyse demographic impact of contraceptive use, but it is seriously limited when applied to the specific activities of family planning programmes. The main reason is that births averted are not referred to any specific calendar year nor to a cohort of acceptors of the method entering the programme during the year, thus reducing the possibilities of assessment of the impact of contraceptive activities.[3/] The conclusion on application of the method to the data of the

---

1/ UN Population Studies No. 76 op.cit p.255

2/ Ibid p.85

3/ Ibid pp.142-143

Republic of Korea was that the gross births averted estimated provide very useful guides for administrators to plan and implement the programme, as well as to evaluate the programme effects[1/]. This was reiterated in the case of Thailand, however, it was pointed out that the lengthy and complicated computation evidently makes the technique less desirable[2/].

(f) Regression Analysis Method

28. The method is described and illustrated in Chapter VI of UN Manual IX as the Multivariate Areal Analysis method. This method, unlike the others presented so far, attempts to specifically infer the role of all other variables included in the analysis. A large range of explanatory variables can be used in this method and in evaluating family planning programme it permits the handling of both programme and non-programme factors. In evaluating the programme impact on fertility, a fertility indicator becomes the main dependent variable; socio-economic, demographic and possibly biological factors, as well as programme indicators, constitute the independent variables. The programme impact is thus assessed directly through the regression parameters. The unit of analysis is an areal subdivision of a country. The estimation of the regression parameters can be carried out through various procedures which vary generally with the regression model.

29. With the heavy data demands (demographic and ecological, socio-economic and related variables, and family planning programme characteristics) this method would be difficult to apply on areal units in the African context due to the fact that the relevant data would not be available. A strong correlation between independent variables can make interpretation of results difficult. The results in application of the method are likely to vary with changes in the conceptual model, the operational definitions and the techniques of estimation. The method has been used to the data of Honk Kong, Mexico, Colombia, Costa Rica, Pakistan and Sri Lanka. It is worth noting that the data constraint as pointed above has been one of the problems referred to in some of these countries.

(g) Experimental Design Methods

30. Chapter VIII of United Nations Manual IX describes and illustrates these methods. The main feature of experimental design methods is to compare two or more groups which are given programme services to varying degrees of services and supplies; one of the groups is supposed to be a control group - a group that does not receive any of the programme services. After administration of the experiment over a period of time the difference in levels of fertility are generally attributed or indicated to be due to the programme. The key requirement is random assignment of experimental units to treatment groups, prior to initiating treatment. When randomization cannot be done by definition, the study is quasi-experimental.

1/ UN Population Studies No. 76 op.cit p. 165

2/ Ibid p. 136

31. The experimental design methods use programme statistics and demographic data. The analysis is generally difficult. It is rather difficult to apply experimental design approach on a large scale. These methods pose serious political and ethical questions of withholding services to the population. In actual practice the control groups may also be exposed to the programme services and thus dilute the results. In and out migration in the project areas may be one of the problems in experimental design approach.

(h) Prevalence method

32. This method is presented in the United Nations Addendum to Manual IX in Chapter II. It estimates the number of births averted as well as reduction in the crude birth rate that results from the programme contraception. In the absence of programme statistics, surveys like the contraceptive prevalence surveys (CPS) or the World Fertility Survey (WFS) would easily collect the data needed. However, poor survey data or out of date data would make the results unreliable.

33. The data required for application of this method are: contraceptive prevalence (i.e. proportion of married women currently using contraception by age and method for both the programme and non-programme sectors, at the beginning of the year; observed age-specific fertility rates; number of women in each five year age group from 15-19 to 45-49; use-effectiveness of different contraceptive methods, age-specific proportions of fecund women and total population size. In application of the method the following estimates are derived: natural fertility that would prevail in the absence of contraception; potential fertility (level of fertility that would prevail in a population if all programme users stopped contraception), fertility impact of programme use, births averted, birth rate impact and method-specific results. It should be noted that from three fertility rates namely observed fertility, potentifal fertility and the natural fertility, one would derive the fertility impact of programme contraception and fertility impact of non-programme contraception. The fertility impact of programme contraception is the difference between potential fertility and observed fertility while fertility impact of programme contraception is the difference between potential fertility and observed fertility; and fertility impact of non programme contraception is the difference between natural fertility and potential fertility.

34. The prevalence method has been recommended on the basis of its simplicity and straightforwardness as an alternative to the other existing methods for estimating the gross fertility impact of programme contraception. Moreover the data requirements can easily be obtained from national surveys[1/].

Summary of the Methods and Criteria for Selecting the Appropriate Method

35. In summary this section has made reference to various methodologies developed for measuring the impact of family planning programme on fertility without going into details of their application. A comparison of these various methods is presentedin Annex I. The methods can be applied to measure the same impact on fertility in integrated maternal and child health and family planning programmes

1/ United Nations: Population Studies, No. 66, Addendum, Manual IX. New York, 1986, p. 14.

bearing in mind the limitations of the methods. In the African context most of these methods are difficult to use due to problems of lack of required data as well as complexity of most of the methods. The African countries for which some of these methods have been applied are Mauritius and Tunisia. These methods on evaluation are not known in most of African countries. The fact that most African countries have recently become interested in family planning programmes also explains why there has not been much use of the methodologies which are also still recent. There is need to improve on these methodologies to take into account the changing situations whereby attention is being given to integrated programmes of family planning and MCH. This was a recommendation of the Second Expert Group on development of methodologies on measuring the impact of family planning programmes on fertility; it was then reiterated by the Third Expert Group Meeting on the same subject held in 1982[1/].

36. After having made a presentation of the various methods developed for the evaluation of family planning programmes impact on fertility it is not possible to advocate any of the methods as the most satisfactory method. It would be ideal, however, to apply as many different methods as possible and compare the results. It is clear that one of the criteria to be used in selecting any method is governed by the availability of relevant data required. If the data needed for evaluation cannot be met for any given method then that method cannot be applied. As many of the methods of evaluation compare the demographic situation before the family planning programme and the period after the programme has been in existence for some time, it is essential that information on fertility levels and prevalence of family planning practice, proportion of married women, marital fertility, etc. be measured before the programme and after the programme. Thus the statistical data for evaluation is a crucial criteria in selection of the method to use. The second criteria to be considered is whether a given method is easy to use in a given country. While some methods can easily be used, others are quite difficult to use as seen earlier. Training of personnel and availability of computation facilities would be necessary to overcome this problem. A third criteria should be the examination of the assumptions inherent in a given method if they are plausible.

IV. EVALUATION OF THE IMPACT OF INTEGRATED MCH/FAMILY PLANNING PROGRAMMES ON THE HEALTH OF THE CHILD AND MOTHER

37. The previous section dealt with evaluation of the impact of family planning programmes on fertility and whether some of the same methods could be extended to the evaluation of fertility impact of integrated MCH/FP programmes. Attention in this section focuses on the evaluation of the impact of integrated MCH/FP programmes on the health of the mother and child. By their nature MCH/FP programmes aim at improving the health of the mother and child through immunization, proper spacing of births and adequate provision of nutrients to both mother and child, and general health education for mothers and children. Most countries in Africa have indicated that one of the major reasons for the integration of MCH/FP programmes is to reduce infant and childhood mortality and maternal mortality.

1/ United Nations, Population Studies No. 87 op.cit p. 21.

38. The application of epidemiological evaluation of specific components of the integration would be a useful way of obtaining the impact of each component. However these evaluations are generally difficult to undertake. Thus the demographic approach to evaluate the impact of integrated MCH/FP programmes have been used. The demographic evaluation approach should at the outset indicate expected changes to be observed, e.g. reduction in maternal mortality rates, reduction in infant and child mortality rates within the integrated MCH/FP programme. Once the change has been observed the problem would be to determine if that change was due to the programme.

39. The experimental design approach would offer a good way of evaluating the impact of an integrated MCH/FP programme regarding the reduction of infant and childhood mortality and maternal mortality over a given period of time. The use of control groups within the experimental geographical area would be used in analysing whether the observed changes are due to the programme or not. Also comparison of national data with that of the area where the programme is executed could be used, if available, for comparison to infer programme impact. Some of the problems usually encountered are that it is difficult to withhold the programmes services and facilities to the control groups. Such experimental designs can only be done on a small scale due to problems of execution on a large scale. Comparable data on national level are generally lacking in African countries. Many other factors e.g. socio-economic changes affect changes in mortality and these would make it difficult to single out the effects of an MCH/FP Programme on the reduction of infant and childhood and maternal mortality.

40. To illustrate the problems referred to above, an experimental project on evaluation was attempted in Ghana on the Danfa project between 1971 and 1977[1/]. Four different areas were used for the project. In group I the following services were provided: comprehensive health care, health education, family planning and the standard ministry of health services. In group II all the services provided in group I were provided except comprehensive health care. In group III only family planning and standard ministry of health services were provided. In group IV only standard ministry of health services were provided. The impact indicators were disease - specific morbidity and mortality rates especially among mothers and children. Although a morbidity base line survey was taker at the initial stage, subsequent medical examinations by the physician showed a weak correlation between information collected and health examinations. Thus morbidity surveys were dropped. Then morbidity data were collected from patient visit cards. However, this approach was also found to suffer from a number of deficiencies such as under reporting of health problems, inaccurate diagnosis by health staff, and failure to include serious cases that by passed the health centre for the hospital. Mortality data were collected through surveys and a continous registration of vital events. Collection of mortality data also suffered problems of inaccurate reporting. Eventually the evaluation team decided to put less emphasis on the impact indicators to measure the performance of the programme.

31/ Rashid Faruquee, Analyzing the Impact of Health Services Project Experience from India, Ghana, and Thailand, World Bank Staff Working Paper No. 546, 1982.

41. The data collection and analysis problems of the Danfa project were compounded by the following factors:

- High turnover of population in the project areas - i.e. in-and out-migration; this made it difficult to collect reliable data on events; it also made it difficult to maintain the desired sample size in the longitudinal studies;
- Estimating maternal mortality accurately was difficult due to (a) mobility of women;(b) inaccuracies in recording causes of death; (c) lack of pregnancy status information on deaths each year;
- Vital events were incompletely reported in the project areas
- The socio-economic levels of the four project areas were different.

42. Given the problems of poor quality of data to estimate mortality rates for measuring the demographic impact of integrated MCH/FP on the health of mothers and children, there is continued need to rely on the available indirect methods of estimating mortality rates. Special surveys, censuses and programme statistics data should all be utilized in programme impact evaluations.

43. Apart from the measurement of demographic impact of integrated programmes there is also need to examine the cost-effectiveness of such integrated programmes since one of the arguments of integration is its cost-effectiveness. This would require input-output analysis. The lack of reliable costing data on the various inputs renders analysis of impact studies difficult to undertake especially in African countries.

Evaluation Problems not Resolved

44. Most of the evaluation methods on demographic impact of family planning programmes which could be adopted to the evaluation of integrated MCH/FP programmes are rather complex for use in African countries. Furthermore, the data needed for these methods are not available in most African countries.

45. Policies and socio-economic factors other than MCH/Family planning programmes e.g. compulsory education, laws affecting the status of women, etc., do have an impact on fertility and mortality and these may have a time lag before their impact may be felt. There is no methodology yet established to disentangle the impact of each component of non-programme variables.

46. There are no effective methods yet established which measure the net impact of integrated MCH/FP programmes. There does not seem to be any simple method on measuring cost-effectiveness of integrated MCH/FP programmes.

V. CONCLUSION AND RECOMMENDATIONS

47. The demographic impact evaluation methodologies which have been documented especially through United Nations publications are those related to family planning programmes. The methodologies are concerned mostly to find out if such programmes have an impact in reduction of fertility. These methods have not been widely used yet especially in Africa for a number of reasons, including the following: The methods themselves are relatively new and are not known by many people involved in family planning programmes; the methods are complex to use and the data needs cannot easily be met in most African countries; it is only recently that African Governments are showing interest to implement family planning programmes and in most cases the objective is not necessarily to reduce fertility. As more and more countries are increasingly interested to integrate family planning programmes with MCH programmes, there is need to develop relevant methodologies for the evaluation of such integrated programmes. However, some of the methodologies developed solely for family planning programmes may be adopted with modification for use to measure impact of integrated programmes. Thus the impact of integrated MCH/FP programmes would be measured in relation to reduction of mortality especially those of children and mothers, reduction in fertility, as well as in relation to nutrition status of mothers and children. The evaluation of management organization structures and actual implementation of the various aspects of the programme should form an integral component of the impact evaluation studies of integrated MCH/FP programmes.

48. The following recommendations are proposed to assist in future evaluation studies of MCH/FP programmes in African countries.

(i) Any programme should have specific quantified objectives or targets which can easily be subjected to evaluation. Evaluation should be given an important role in integrated MCH/FP programme and a unit within the programme should be given the responsibility for the evaluation of the programme impact over time;

(ii) Continuous collection of programme statistics and demographic data should be given priority as part of the programme activities;

(iii) Those involved in evaluation should be trained and exposed to existing evaluation methodologies;

(iv) Periodic epidemiological and demographic surveys should be conducted to provide some of the data requirements in addition to programme data and data from the censuses;

(v) The role and impact of integration itself should be given special attention for assessment;

(vi) Since impact evaluations in most cases are difficult to be measured directly, proxy measure should be attempted wherever possible;

(vii) There is need for simple methods to be devised for evaluation of integrated MCH/FP programmes as was recommended by the United Nations Third Expert Group Meeting on Methods of Measuring the Impact of Family Planning Programme on Fertility held in Geneva in April 1982.

SELECTED CRITERIA FOR COMPARISON OF METHODOLOGIES TO MEASURE THE DEMOGRAPHIC IMPACT OF FAMILY PLANNING PROGRAMMES

Criterion	Standardization	Trend analysis	Experimental design	Standard couple-years of protection	Component projection I (CONVERSE)	Component projection II	Reproductive process analysis	Prevalence	Regression analysis
Sector: public; private; both ...	Both	Public	Public	Public	Public	Public	(Individuals)	Public; private; both	Public
Input data	Selected factors affecting CBR/ TFR/GFR	Limited pre-programme, post-programme trends	Heavy to ensure comparability of subjects with controls	Programme acceptors by age continuation rates	Heavy; demographic and programme service statistics	Heavy	Heavy	Light	Heavy: socio-economic by area programme input data
Ease of application	Straightforward; can be computerized	Simple	Difficult	Moderately difficult	Fair computerized	Laborious	Laborious	Simple	Fair (Computer packages available)
Potential fertility: gross or net	Gross	Net	Net	Net	Gross	Gross	Gross	Gross	Net
Robustness of findings	Sensitive to initial date	Poor; sensitive to time interval	Fair; diffusion, contamination between subjects and control	Fair: depends on quality of programme data	Fair; depends on quality of programme data	Fair; depends on quality of programme data	Fair	Good	Fair
Confounding factors considered	Implicit; not adaptable for explicit factors	Implicit	Implicit	Pregnancy penalty, sterility, post-partum overlap	Sterility, post-partum overlap, trend in natural fertility and nuptiality	Implicit	Pregnancy penalty, sterility, post-partum overlap	Pregnancy penalty, sterility	Implicit
Subjects treated	Population groups	Population groups	Population groups	Programme acceptors	Programme acceptors	Programme acceptors	Individuals	Population groups	Population groups
Direct output measure	Contribution of marital fertility to observed change in CBR holding other factors constant	CBR/fertility in absence of programme	Contraceptive prevalence in subject/control groups (areas); sometimes fertility differentials	Lifetime births averted by programme acceptors	Age-specific annual CYPs, births averted by programme acceptors with annual impact on all manner of demographic variables	Annual births averted by programme acceptors	Method-specific annual births averted by individuals, to end of reproductive age	Annual births averted in corresponding sector	Percentage of observed fertility differentials explained by programme input

NOTE: CBR = crude birth rate; TFR = total fertility rate; GFR = gross fertility rate; CYP = couple-years of protection.

Source: Reproduced from United Nations: Studies to Enhance the Evaluation of Family Planning, Population Studies No. 87, New York, 1985, Page 32.

Selected Bibliography

B. Melliti — "An Evaluation of the Tunisian National Family Planning Programme, 1964-June 1971", 1 November 1971 (Paper presented at the African Population Conference held in Accra, Ghana, 9-18 December 1971).

C. Chandrasekaran and I.A. Hermalin (eds.) — Measuring the Effects of Family Planning Programmes on Fertility, IUSSP for OECD Development Centre, Paris, 1972.

Christos Xenos — "Family Planning and Fertility Change in Mauritius", (paper prepared for the General Conference of the International Union for the Scientific Study of Population, Mexico, August 1977).

Jack Reynolds — "Evaluation of Family Planning Programme Performance: A critical Review" in Demography Vol. 9, Number 1, February 1972.

R.G. Potter — "Estimating Births Averted in A Family Planning Programme" in S.J. Behruman, L. Corsa and Freedman, Eds., Fertility and Family Planning - A World View Ann Arbor, Michigan, United States, 1969.

Rashid Faruqee — Analysing the Impact of Health Services Project Experiences from India, Ghana, and Thailand, World Bank staff working paper No. 546 1982.

Roberto Cuca — Family Planning Programme: An Evaluation of Experience World Bank staff working paper No. 345, July 1979.

The Impact of Family Planning Programms on Fertility in Population Reports Series J Number 29, January - February 1985, the Johns Hopkins University, USA.

UNESCO — Evaluation Manual, by Sven Grabe, 1983

UNDP/UNFPA — Report of the Evaluation of UNFPA Assistance to the National Family Planning Programme of Mauritius, New York, 1979.

United Nations Department of Economic and Social Affairs

Methods of Measuring the Impact of Family Planning programmes on Fertility: Problems and Issues (Population Studies, No. 61) ST/ESA/SER.A/61, New York, 1978.

Manual IX, The Methodology of Measuring the Impact of Family Planning Programmes on Fertility (Population Studies, No. 66) ST/ESA/SER.A/66, New York, 1979.

Evaluation of the Impact of Family Planning Programmes on Fertility: Source of Variance (Population Studies, No. 76). ST/ESA/SER.A/76, New York, 1982.

Studies to Enhance the Evaluation of Family Planning Programmes (Population Studies, No. 87) ST/ESA/SER.A/87, New York 1985.

Addendum Manual IX, The Methodology of Measuring the Impact of Family Planning Programmes on Fertility (Population Studies No. 66) ST/ESA/SER.A/66/Add.1, New York, 1986.